



Applicant:

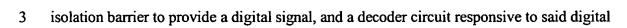
Prendergast et al.

For:

ISOLATION SYSTEM WITH ANALOG COMMUNICATION ACROSS

AN ISOLATION BARRIER

- An isolation system with analog communication across an isolation barrier
 comprising:
- an isolation barrier circuit having at least one isolation element;
- 4 a digital to analog circuit having an analog output connected to the
- 5 isolation barrier and an input for receiving an input digital signal to be communicated
- 6 across the isolation barrier; and
- 7 an analog to digital circuit having an input coupled to the analog
- 8 output of the isolation barrier circuit for providing a digital output signal.
- 1 2. The isolation system of claim 1 in which said digital to analog circuit
- 2 includes an encoder circuit responsive to said input digital signal to provide a digital signal,
- 3 and a digital to analog converter responsive to said digital signal to provide to said isolation
- 4 barrier said analog output signal.
- 1 3. The isolation system of claim 1 in which said digital to analog circuit
- 2 includes a digital to analog converter with an input for receiving said input digital signal
- 3 and a modulation circuit responsive to said digital to analog converter for providing said
- 4 analog output.
- 1 4. The isolation system of claim 1 in which said analog to digital circuit
- 2 includes an analog to digital converter responsive to said input analog signal from said



- 4 signal to provide said digital output response.
- 1 5. The isolation system of claim 1 in which said analog to digital circuit
- 2 includes a demodulator circuit responsive to said input analog signal from said isolation
- 3 barrier, and an analog to digital converter responsive to said analog signal to provide said
- 4 digital output signal.
- 1 6. The isolation system of claim 1 in which said analog to digital circuit
- 2 includes an analog to digital converter.
- The isolation system of claim 1 in which said digital to analog circuit
- 2 includes a digital to analog converter.
- 1 8. The isolation system of claim 1 in which said digital to analog circuit
- 2 includes a termination resistance connected with said isolation barrier.
- 1 9. The isolation system of claim 1 in which said analog to digital circuit
- 2 includes a termination resistance connected with said isolation barrier.
- 1 10. The isolation system of claim 1 in which said isolation element includes a
- 2 capacitance.

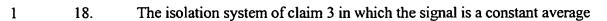
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- 1 11. The isolation system of claim 1 in which said isolation element includes a
- 2 transformer.
- 1 12. The isolation system of claim 1 in which said analog to digital circuit
- 2 includes a common mode interference signal sensing circuit and a summing circuit for
- 3 removing the common mode interference signal from the received analog signal from the
- 4 isolation barrier.
- 1 13. The isolation system of claim 1 in which said digital signal to be
- 2 communicated across said isolation barrier includes data.
- 1 14. The isolation system of claim 1 in which said digital signal to be
- 2 communicated across said isolation barrier includes control information.
- 1 15. The isolation system of claim 14 in which said digital signal to be
- 2 communicated across said isolation barrier includes reference and calibration information.
- 1 16. The isolation system of claim 1 in which said digital signal to be
- 2 communicated across said isolation barrier includes data and control information.
- 1 The isolation system of claim 2 in which the signal is a constant average
- 2 signal.

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- 2 signal.
- 1 19. The isolation system of claim 4 in which the signal is a constant average
- 2 signal.
- 1 20. The isolation system of claim 5 in which the signal is a constant average
- 2 signal.

| 1 | 21. A bi-directional isolation system with analog communication across an |
|----|---|
| 2 | isolation barrier comprising: |
| 3 | an isolation barrier circuit having at least one isolation element; |
| 4 | a first digital to analog circuit having an analog output coupled to a |
| 5 | first side of the isolation barrier and an input for receiving an input digital signal to be |
| 6 | communicated across the isolation barrier; |
| 7 | a first analog to digital circuit having an input coupled to the first |
| 8 | side of the isolation barrier circuit; |
| 9 | a second digital to analog circuit having an analog output coupled to |
| 10 | a second side of the isolation barrier and an input for receiving an input digital signal to be |
| 11 | communicated across the isolation barrier; and |
| 12 | a second analog to digital circuit having an input coupled to the |
| 13 | second side of the isolation barrier circuit. |
| | |
| 1 | 22. The bi-directional isolation system of claim 21 in which the input digital |
| 2 | signals are communicated simultaneously across the isolation barrier circuit. |
| | |
| 1 | 23. The bi-directional isolation system of claim 21 in which the input digital |

1 24. The bi-directional isolation system of claim 21 further including at least one

signals are communicated alternately across the isolation barrier circuit.

2 echo cancellation circuit for removing a local echo signal from the input of at least one of

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3 said first and second analog to digital circuits.